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LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JANUARY 20, 1857.

GUIDES FOR SEWING MACHINES—Wm. B. Bishop, of Brooklyn, N. Y.: I am aware of the patent of H. C. Dickinson, of May 18, 1855, wherein are used grooves in the under or bottom side of the pressure pad, for the purpose of stitching cords in work, and I therefore claim in part, device or thing, claimed by him.

I am aware of the patent of John B. Nichols, Jan. 30, 1855, for a binding attachment, which has a semi-elliptical groove, through which the binding passes, to double it around goods preparatory to sewing it thereon, and that said guide is rendered adjustable, and I therefore claim nothing patented to him.

I claim an elongated pressure bar or foot having there in a flat groove to rec ive the edge of the center or button hole plate which bounds one side of the slot for bearing surface forming the under and guiding surface for the other edge of the slot, when the latter is thereby combined to stitch a minuous straight seams in shirt bosoms at a rapid rate, and perfectly straight, without any care or help from the operator—the whole being constructed, arranged and operating as set forth.

MACHINE FOR SAWING—S. S. Blake, of Claremont, N. H.: I do not claim expelling or forcing the moisture from the pulp, by means of a centrifugal apparatus, for my use of the means employed for effecting that purpose as herein described.

I claim, first, the employment or use of the pump I, vacuum chamber, I, and vacuum chest C, provided with the slide valves and passages, and arranged relatively to the pipes, D G, by means of the cocks, c d, the parts being arranged and operating as shown, and described, for the purpose set forth.

Second, I claim the air and water trunk or reservoir, F, provided with the pipe, K, and communicating with the external atmosphere, as shown in the drawings, operating by means of a pipe, O, with the pipes, PP, having the tubes, p, connected to the ends of the said pipes, arranged, substantially as described, for the purpose of trimming the edges of the pulp from the paper, and further claim trimming the edges of the pulp by means either or air or steam, when ejected through the tubes, i, i, arranged as shown.

Third, I claim the pipe, Q, with the tube, K, and rotating shaft, a, as shown for the purpose of discharging the margin or strips of pulp from the wire cloth apron R.

Fourth, I claim the current of air, s, from the rollers, s s, placed on it, the roller, s, being connected with the spring, s', and arranged as to operate in the manner that the felt upon S is stretched or distended, transversely, and also relieved from the current of air when the rollers, s s, operates.

Fifth, I claim the cylinder U, in combination with the wet press cylinders T, T, when the speed of the cylinder U, and cylinders T T are so variable for the purpose of stretching or distending the apron S, longitudinally as herein described.

Several very valuable improvements are embraced in this invention; but it would not be possible to convey a clear idea of these without engraving. They embrace a superior mode of forming the paper, of the paper cut from the pulp, the proper discharging of the strips cut from it, and the keeping of the felt apron that conveys the paper to the pressure cylinder properly distended, to prevent creases in the paper, and also to improve the quality of the paper, but to prevent considerable waste now involved in its manufacture.

FORMING BATS FOR BELTING—John H. Bloodgood, of New York City: I claim the combination of the rollers C and C, with the vibrating drum A, in the manner and for the purpose described.

I also claim the combination of the rollers B and C, with the vibrating drum A, and the belts, D and E, substantially, in the manner and for the purpose specified.

CENTRE VENT WATER WHEEL—E. G. Cushing, of Dryden, N. Y.: I do not claim the curved surface of the bucket, as I am of the opinion that one stated curve is not adapted to all heads with equal propriety.

But I claim making the bucket with a back of such a curve as to cause the space of a particular segment from the outside to the inside of the wheel.

Second, I claim hanging the buckets combined with a spring, in a manner that the time of discharge orifice is regulated by the quantity of water let into the scroll, and the amount of power required, and closing together when the gate is shut.

ARTIFICIAL TEETH—Alfred A. Blandy, of Baltimore, Md.: I claim constructing artificial teeth with a hole, a passing vertically through them, for the reception of the molten metal and which, when cooled, projecting sides in the manner and for the purposes set forth.

SAWING MACHINE—Geo. Gregg, of Lowes, Mill, Va.: I do not claim the use of a reciprocating saw, but claim the whole when constructed and operated as set forth.

SEWING MACHINES—Silas Howe, Jr., of Brooklyn, N. Y. Patented March 3, 1846: I claim the hook drawing the thread through the cloth, by means of a finger, or its equivalent, operated in connection with mechanism which passes the needle through the cloth, substantially as set forth.

STEAM PRESSURE GAUGES—E. G. Allen, of Boston-Mass., Assignor to Henry O. Allen, of Boston, aforesaid: I am aware that the use of elastic bags or capsules, in steam gages, is old. It is seen in the rejected applications for patents of J. Lowe, Oct 31, 1854, and Chapman, April 1855, I therefore distinctly disclaim the use of an impervious bag or capsule composed of rubber or other pliable material.

But the employment of a metallic helical spring dome D, in combination with a capsule in steam gages, forms an important and highly valuable improvement, and therefore I disclaiming the use of such spring in other cases, unless constituting a dome, D, and disclaiming every part of my device described, such in steam gages, or any other steam gauge or analogous instrument.

I claim the helical spring, D, constructed, arranged and operating in the manner and or the purposes substantially as described.

This spring constructed with a helical spring, wholly or partly dome shaped, combined with a capsule of vulcanized India rubber, lining its interior or covering its exterior in such a manner that the spring may act upon to extend or contract it by the differential pressure, between the steam and the atmosphere, the capsule serving as an impervious medium through which the differential pressure is communicated to the also contained the capsule. The spring is connected with an index. It is stated to be an excellent improvement.

DOUBLE PILE CARPETS AND RUGS—John Goulding, of Worcester, Mass.: The manner of weaving in the manner described, that is to say, crossing the top ground warp once for every two of the bottom, binding or tying which passes through and binds the pile warps and crossing the ground warps of the bottom fabric once only for four shoots of the binding filling, three of which pass through and bind the pile warps.

TREATING PHOTOGRAPHIC PICTURES—John Bishop Hall, of New York, N. Y.: I claim producing in pictures to be seen by direct light, a high artistic and stereoscopic effect, by combining with the direct light or reflected background or its equivalent, two or more identical pictures of the same subject, rendered more or less transparent, and executed on, or attached to plates of glass, in the manner substantially as set forth.

SEWING MACHINES—James E. A. Gibbs, of Mill Point, Va.: I claim making the chain stitch with a vibrating needle in combination with a stationary hook.

GRAIN SEPARATORS—Geo. Heberling, of Quincy, Ill.: I distinctly disclaim the invention of the screens described, as no one of them is new, but—

I claim the arrangement in a grain cleaning machine of the plate, C, armed with teeth, d, and rubbers, e, the conical cylinder, D, with beaters and fans, F and G, attached chute or rim, M, plate, N, tubes b, and fan H—all constructed and operated, substantially in the manner and for the purpose set forth.

DIE FOR MAKING SPIKES—E. T. Henry, of Scranton, Pa.: I claim the lip, V, at the lower end of the groove, a, in the die A, substantially as shown for the purpose specified.

By forming a cutting edge at the point end of the die, as embraced in this invention, the spike machine of A. M. George, which was very defective, is converted into a most excellent machine for making railroad spikes.

HARVESTERS—M. G. Hubbard, of Penn Yan, N. Y.: I claim the combination of the finger bar and knife with the clearer, when constructed and operating, substantially in the manner and for the purpose set forth.

I also claim binding the cutting standard and track clearer forward of the finger bar, so that any irregularities of the shoe, and supporting the same against lateral pressure by means of the clearer post, as above specified.

CUTTERS FOR HARVESTERS—M. G. Hubbard, of Penn Yan, N. Y.: I do not claim forming the edge of cutters, by bending, as described in the patent of said Hubbard, an offset for the cutting edge—for this has before been done by Hazard & Howe, Woodworth, and others.

I claim the cutter when formed in one piece, as seen in figure 2, constructed substantially as and for the purposes set forth.

PARING APPLES—Jared O. M. Ingersoll, of Ithaca, N. Y.: I do not claim the instrumentality of the knife, or its equivalent, when constructed therewith, which are in common use, but confine myself to this specific claim, viz:

The peculiar form of the rod M, operated by pins on the face of the hub of the driving wheel, for the purpose herein set forth, arranged and operated, substantially as described.

BLAST FURNACE—Wm. Kelly, of Eddyville, Ky. I do not claim blowing blasts of air into a liquid mass of iron, so as to produce a boil, as this is well known.

I now claim, in the process to refine the iron separate and apart from coal, the employment or use of a furnace, as above described in a blast furnace, has a large body or bulk to contain the metal constructed as set forth in figure 1.

I claim the combination of the hearth of a blast furnace with the auxiliary tuyeres, B B and C, for de-liver-ing a blast of air to the metal in the process and for the purpose whole constructed and operating in the manner and for the purpose specified.

HARVESTING RAKE—Smith Manny, of Waddams Grove, Ill.: I claim as connecting the leading board, D, to the main frame, A, by means of the curved elastic shoe, a, rigidly attached to the leading board, substantially as shown and to the under side of the main frame, by joint, C, in rear of the finger bar, and the curved spring which connects the said leading board serves to carry the tuiurnm of the seat lever, J, C, and the rake head, E, over obstructions, and lowered, substantially in the manner specified.

And I further claim the arrangement of the rake-head for operation together or the seat lever, F, and foot-lever, G, or treadle, E, essentially as set forth for the purposes described.

BRIDGES—D. C. McCallum, of Owego, N. Y. I claim as so combining the arch with the truss and suspension bean. the top horizontal surface of the abutment, or pier, and the lower chords, or tie, by means of the iron shoe and tension rods, as that the thrust of the arched band shall be counteracted by the tension of the chords, any deflection in the lower chord be counteracted by an upward force at each end of the tension rods, substantially as described.

I also claim the method of lengthening or shortening the braces of a bridge truss, and the timbers to which they may be elevated, or depressed, as required by means of the yoke, d, and the screws, e e, and the nuts, f f, and the straining pieces, c c, with their nuts d, substantially in the manner described.

HYDRANT—James G. Morgan, of Brooklyn, N. Y.: I am aware that hydrants have been constructed with cisterns to receive the water from the discharge or supply pipe, at a point below the surface of the ground where it will not be frozen, and which are also to be supplied with flexible and metal pistons, or valves to force the water again into the discharge or supply pipe when it is about to be opened, and to receive the water from the discharge pipe when the valve is closed.

I am also aware that air chambers have been applied to discharge pipes to break the force of the water, and maintain a constant flow, and I therefore do not claim such as my invention

I am not aware that air chambers have been applied to hydrants, in such a manner as to admit or being compressed, and thus operate as springs, to force the water into the discharge pipe, and by releasing them from the compression, also to receive the discharge water, and in turn back into the cistern, and the air in the air chamber to fill the discharge pipe: wherefore the machinery and cock can be placed above the ground convenient to access, and when the cock is closed, the valve, which is then the place of the flexible valve or metal pistons, used by others, is subject to no greater leakage pressure, than what is due the depth of water in the air-chamber pipe above the cistern.

I claim the combination of a cistern to receive and retain the waste water of a hydrant with one or more air or gas chambers, or its equivalent, arranged in such a manner that by compressing the air chamber, the air therein will be forced into the cistern, and by releasing the water in the cistern into the discharge pipe, and by releasing the air chamber from such pressure, the water from the discharge pipe will run into the cistern. Nor do I limit my claim to a hydrant, but claim the same in any mechanism cylinder a mechanical equivalent.

I also claim the combination and method of compressing and releasing the flexible air chamber, in connection with the opening and closing of the cock, substantially as described.

BRICK MACHINES—B. F. Nave, of Roanoke, Ind.: I claim the peculiar manner of operating the said auger, T, by means of the bevel gear, S, the pinion, R, and the cross bars, V, and shields, W, when the described parts are constructed and arranged for joint operation in the manner and for the purposes set forth

HOSE COUPLING—Lodner D. Phillips, of Chicago, Ill. I claim the combination of the two parts of the hose coupling, having conical tubes, b b, on the exterior ends thereof, with the annular grooves, d d, as herein described and for the purposes set forth.

REFLECTORS FOR VAULTS—Emil R. Pichler, of Boston, Mass.: I am aware that reflectors for vaults of various locations have been used. I do not claim such plates.

But I claim so constructing and arranging the plates described in a frame or frames, as to have the appearance and effect of domes, double convex lenses, such plates are backed by any reflecting material as set forth.

LAYING TOPS FOR CORDAGE MACHINES—Wm. Robinson, of Warsaw, N. Y., assignor to Amenzo W. Beardsley and Wm. Robinson, both of Warsaw, N. Y.: I claim laying the use of a moveable cone, or its equivalent, so constructed and arranged, as to form a solid core for the strands, and be pressed by them against the smaller strand or strands, substantially in the manner and for the purposes set forth; whether said moveable cone is pressed against the strands by the weight or other power.

MACHINE FOR BENDING TIMBER—James D. Saxon, of Maury County, Tenn.: I claim the bending frame, A, or its equivalent, arranged and operated substantially as described and for the purposes set forth.

I also claim, in combination there with, the mechanism and arrangement described, or other equivalent devices for the purpose of operating the bending roller, I, or its equivalent, as specified—the whole being constructed and made to operate together, substantially as specified and for the purposes set forth.

I also claim, in combination with the bending frame, A, or its equivalent, the mechanism and arrangement described, or other equivalent devices for the purposes of bending timber in the form of curves, or curves, if the same is used in combination with a revolving mold, or mold operating or arranged in any other manner.

WINNOWING MACHINES—Jos. and Jas. Montgomery, of Baltimore, Md.: We claim the application of an adjustable sieve, M, above the auxiliary screen box, D, when arranged in combination therewith, in such a manner as to separate the large impurities before the grain is subjected to the action of the blast in order to render said auxiliarity screen-box more efficient in its action, and thereby allow it to be made as limited in extent as desirable, substantially as set forth.

FEEDING LUMBER LATERALLY IN SAWING MACHINES—Saml. B. Sharp, of Detroit, Mich.: I claim the combination of mechanism, by which the lateral adjustment of the log is affected, as described, such consisting of the spring, g, the stationary bearing roller in, or its equivalent, the bearing, k, the screw, l, the slide bar, i, the catch mechanism, T, the pinion, t, and the rack or cog-bar, applied to the carriage, substantially as described the whole being arranged and operating together essential as specified.

And I also claim making the carriage or head block, to movable, independently of the saw, or frame, on which it is supported, and combining with said carriage and its novel rack, a lever and pawl, or an equivalent device, whereby said carriage may be moved towards the saw, by the hand of an attendant applied to the said lever.

COOKING STOVES—John G. Treadwell, of Albany, N. Y.: I claim in stoves with elevated ovens, having an escape flue below the oven, and one flue above the oven, the construction and arrangement of the damper, so that by turning it in one direction it shall compel the flame and smoke to pass around the oven, and by turning it in the opposite direction it shall pass directly from the oven, substantially as set forth and described.

BENDING SHEET METAL—John Wright, of Plattsburg, N. Y.: I claim the bending bar, A, manufacturing Company of same place, I disclaim every part of the machine described, which belongs to the ordinary machines, but I claim the plate, D, when arranged and employed as in the manner and for the purposes substantially set forth.

Machines hitherto employed for bending the edges of sheet metal to form locks bend the metal to so great a distance from the part where the lock is formed, because there is no support or device employed to prevent the sheet bending there. This invention obviates this defect, thereby producing a superior article of work.

ROOFING CEMENT—R. H. Smith, of Cincinnati, O.: I do not claim any or either of the above mentioned ingredients, for the said cement, when used when combined with each other, broadly.

But I claim the cement formed by materials prepared in the manner and in the proportions set forth, whereby a cement may be made and applied to roofing and other purposes, which shall not burn, nor scald, and by which the offensive smell, arising from the use of coal tar, &c., is neutralized and destroyed.

MAKING CORD—Re-Issue—Wm. E. Nichols, of East Haddam, Conn.—Patented Dec. 11, 1849. I claim, first, as my contribution to the art of making cord, while the main frame is revolving to lay them into cord, by causing the bobbin frame to travel endwise parallel to, and revolving with the bobbin frame to travel over a fixed and smooth surface, substantially as the frame so revolve.

Second, I make no motion to the mere twisting of the bobbin frames, by friction, by any of the devices usually employed for vinther purposes.

Third, I claim the construction and arrangement of the central stem or spindle of the bobbin frame, operating in combination with the bobbin frames, by the yarns are collectively subjected to progressively increasing tension and back motion, substantially as set forth, and the process of laying them into the strand, whereby the latter is rendered smooth and perfect in its form, and uniform density and strength, and subjected to uniform tension, while being laid into the strand.

HARVESTING MACHINES—Additional Improvement—Robert J. Morrison, of Richmond, Ind.: I claim in addition to Cyrus Mail Improvement, dated Dec. 16th, Dec., 1850 allowing the roller, c, to come against an elastic substance, which is capable of yielding to the pinion, after passing any inequality in the ground, for the purpose of saving the machine from sudden jar, as set forth.

QUARTZ—Solid and Liquid.

Quartz is pure silica, and in its purest condition, in the form of white sand or rock crystal, is extensively employed for manufacturing crystal wares and the finest qualities of glass. It is a constituent of many rocks, and composes most of the pebbles of gravel beds. There is no mineral which appears in so many forms and colors. It is insoluble in sulphuric, nitric, and hydrochloric acid, hence the great value of glass vessels, in chemistry, for containing these acids; it has no cleavage, and is a very refractory, not melting in the heat obtained with the blow-pipe.

Although it resists the action of intense heat to reduce it to a liquid state, yet it is a fact, and a most useful one to scientific men, that by combining it with an alkali, it will melt like wax, and can be formed into threads fine as those of the spider's web, and into any form whatever. By mixing quartz with soda or potash, it will melt in a furnace and become glass. If too much alkali is combined with quartz in the manufacture of glass, the surface of the glass will often appear cloudy, by the excess of the alkali in the glass attracting moisture.

Although quartz is not acted upon by the strongest nitric acid, nor melted by the common heat of the blow-pipe, yet it can be dissolved in a solution of a common salt.

Silica is an acid, just as much so as the oil of vitriol. It is composed of a base and oxygen (Si. O.^{2}); and sulphuric acid is composed of a base, sulphur, and oxygen (S. O^3) in the same proportions. In combining with an alkali like soda, therefore, it forms a neutral salt.

In our last number we illustrated a method of manufacturing the silicate of soda—quartz reduced to a liquid condition—by caustic soda under a high pressure of steam. The application of this vehicle or agent to the arts in the manufacture of artificial stone, as a binding agent, and for coating the outside of walls, &c., is attracting considerable attention at present, and everything we published on the subject has been carefully perused.

Soluble quartz, or glass, as it is more commonly termed, can never be rendered useful in the arts unless it can be converted into neutral insoluble salt, composed of equal parts of silica and soda. Common soluble or liquid quartz contains an excess of alkali three times the quantity of silica; this is the reason why it is soluble in water. Why is common liquid quartz unsuited to cover or coat the surface of walls, or to form a cement for making artificial stone? It contains an excess of an alkaline salt, which is deliquescent, and which will attract moisture and crumble away, when exposed to the atmosphere, when combined in any artificial stone, or employed as a coating on the surface of any wall. As an agent to be used in the arts, as a wall coating or cement, it would be of great value could it be deprived of its deliquescent property. By the process of Mr. Ransome, described in our last Number, more silica is taken up, held in solution in the liquid than by the common process heretofore employed; hence, the liquid quartz which he obtains by it, is brought more near to the condition of an anti-deliquescent: salt when dry; yet it is not perfectly non-deliquescent. By employing powdered flint in his artificial stone, then subsmitting it to a high heat, he has succeeded in making it non-deliquescent, but this application of it to the arts is very contracted. Something more is wanting, namely, the discovery of some cheap substance to combine with soluble glass, to render it a non-absorber of moisture, whether applied as a coating to outside walls where it cannot be dried by heat, to inside walls, or to the manufacture of artificial stones and other articles. We have no doubt but such a discovery will yet be made.

Monetary Intelligence.

For the benefit of our readers, as well as for our own benefit, we are induced to copy the following item from *Thompson's Bank Note Reporter* of the 24th inst., in regard to banks whose bills are discredited in this city:

"It was our intention to have given the circulation and securities of the Illinois and Indiana Banks that have discredited, but the storm has prevented our doing so this week. The trombles in Illinois and Indiana have been precipitated by the failure of the Gramercy Bank, which concern, or its backers, owned several other banks, which, of course, all went over like a row of bricks. The Gramercy Bank owners, we see, are at the head of one of the branches of the Bank of the State of Indiana.

The discredited banks, as far as we are posted, are:

Gramercy Bank, Lafayette, Ind.
Shawnee Bank, Attica, Ind.
People's Bank, Carmi, Ill.
Stock Security Bank, Danville, Ill.
Prairie State Bank, Washington, Ill.
Rushville Bank, Rushville, Ill.
The Exchange Bank, Bangor, Me., has gone into the hands of Receiver—"Tomb of the Capulets."

The people of Gordon County, Geo., have resolved, in public meeting, that they will not receive as money any of the following wild cat issues in Georgia:—Bank of Columbus; Bank of Middle Georgia, at Macon; Cherokee Insurance and Banking Co., Dalton; Interior Bank, Griffin; Manufacturers' Bank, Macon: Merchants' Bank, Macon; Southern Bank, Bainbridge; nor any other that are not bankable at the city of Augusta or Savannah."

Being in daily receipt from our patrons of bank bills from every State in the Union, we publish the above list of banks whose bills are unsaleable in this city, that our friends may save themselves the trouble of remitting them to this market, for such as we receive we shall be obliged to return to the sender until an agency is opened here for their redemption at the usual discount.

Liquid manuring having been very successful in 1856, in the practice of some farmers in England, the system will be greatly extended during the next season.

Scientific American.

NEW YORK, FEBRUARY 31, 1857.

The Invention of Vulcanized India Rubber.

The elastic character, the water and air proof qualities possessed by india rubber in its natural state, early attracted the attention of various persons to it, as an article eminently adapted for a great variety of purposes, especially water-proof clothing. It was first made into a cement by dissolving it in naptha, or in spirits of turpentine, then applied to the surface of cloth and dried, forming a fabric impervious to water and air. Such fabrics were easily affected with heat, rendering their cement soft and clammy, and they possessed a very disagreeable odor. They were unfit to be worn as article of dress, consequently their use was very limited. What a change has come over india rubber manufactures, since the discovery of vulcanization! Such fabrics are now manufactured yearly in our country, to the value of several millions of dollars; they are applied to almost any purpose, and assume every variety of form. They have no longer an offensive odor, while they maintain their elasticity in all weathers and can withstand the temperature of high-pressure steam without becoming soft. These results have been accomplished by two inventors, the invention of one (N. Hayward, of Woburn, Mass., dating 23rd Nov. 1838,) embracing the adding of a little sulphur to the india rubber, forming a new compound; that of the other (Charles Goodyear, in 1844,) embracing the submitting of sulphurized india rubber compounds to a degree of heat of about 270° Fah. These two inventions have been the means of originating and establishing new branches of business, and new articles of manufacture, from which, not only our own country, but every country on the face of the earth, is now deriving immense advantages. The patent of Hayward, which was assigned to Goodyear, has been public property for some years; its extension having been refused by Mr. Hodges while Commissioner of Patents. Endeavors are now making to obtain an extension of it by an Act of Congress, and the petitioners by counsel have been heard before the Committee on Patents in the House of Representatives.

We do not know what will be the final action of Congress on this question, but it is rather remarkable, that at the present moment, strong testimony has been evolved to prove that N. Hayward is not the original inventor of the sulphurized india rubber compound; that it was invented in Germany in 1832, six years before Hayward's patent was granted. A pamphlet has been put into our possession, which is a translation by Prof. Angell, of Brown University, Providence, R. I., of a publication issued in Berlin, Prussia, in 1832, describing experiments made by F. Luedersdorff with india rubber, and the production of sulphurized india rubber compounds. The clamminess of disolved india rubber, and its tendency to decomposition are attributed to its resinons properties. On page 28, the following language occurs: "After a long series of experiments, in which neither deodorizing nor oxydizing substances, neither alkalies, nor mechanical means, which affected the speedy drying, produced the desired result; I succeeded at last in finding in sulphur the substance, which even in very small quantities, perfectly prevented the injurious effect of the resinous aggregation." Instructions are given how to prepare the sulphur solution, by heating and stirring 3 parts of flour sulphur in 100 parts of rectified oil of turpentine, bringing them to a boiling heat then dissolving the india rubber in the solution. By Hayward's patent, one tea spoonfull of sulphur was mixed with that quantity of oil of turpentine required to dissolve a pound of india rubber, and in this respect, there is little differance between his method and that of the Prussian doctor. It is the sulphur which is the grand agent in the production of vulcanized india rubber, no matter how combined, in solution, or with india rubber softened by heat. Leave sulphur out of the question, and we would have no vulcanized india rubber fabrics.

The question now arises, what reliance is there to be placed upon the authenticity of this pamphlet, published six years before Hayward's patent was obtained? We have been assured that the original work is in the College Library, at Providence R.I.; but it is rather singular, that in the many controversies on this subject, and the numerous suits at law which have taken place, respecting the originality of the invention, that such information was not produced as testimony before some tribunal.

That Dr. Leudersdorff made the experiments described, we will assume to be true in every respect, but neither is our country or any other indebted to him in the least, for the introduction and success of india rubber manufactures. To American inventors alone, is the world indebted for the invention of vulcanized india rubber. Hayward was no doubt totally ignorant of the Prussian doctor's experiments; he probably could not read German; he made the discovery of sulphurized india rubber by his own efforts, and he is an original inventor, in this sense of the term.

We are opposed, however, to the extension of his patent, by a special Act of Congress; it has become public property, and to extend it would do great injustice to the public.

Building in Frosty Weather.

The bond which unites brick to brick and stone to stone, to form a close and adhesive connection between them, is a cement (mortar) formed of the oxyd of calcium (lime,) silica or sand, and water. The water intimately diffused through mortar is the vehicle which plays the most important office —chemically speaking—in conferring those qualities upon mortar which render it capable of fulfilling the objects for which it is used. And yet most builders, architects, and those who have buildings erected during the winter season, appear to be entirely ignorant of this fact in chemical science.

The water in mortar holds lime in solution, and gradually attracts carbonic acid from the atmosphere, whereby its particles acquire powerful cohesive and adhesive properties, and in the course of time it becomes a stone itself, firmly adhering to the surfaces which it unites. If we dissolve some quicklime in water, in a vessel, and allow it to stand exposed for some hours: it will attract carbonic acid from the atmosphere, and a thin, hard scale like ice will form on its surface; this is a pelicle of marble, it is composed of lime, water, and carbonic acid. The scale formed on the surface of the lime solution in the vessel, prevents carbonic acid penetrating under it, otherwise a thick solution of lime would soon become a solid block of marble. But in common mortar the conditions for the absorbing of carbonic acid throughout all its parts, are very perfect, because the particles of sand render it sufficiently porous to allow the air, which contains carbonic acid, to penetrate to its inmost parts; therefore mortar ultimately becomes a stone. If we take quicklime and sand, mixed together in proper proportions to form good cement, but use no water to make them into mortar, exposure of them to the atmosphere for centuries would not form them into a hard stone, because the water of crystalization, which is positively necessary to promote cohesion among their particles, is wanting. Water, then, is the great vehicle which chiefly imparts cohesive properties to common mortar.

Hard water, in freezing, parts with the mineral and earthy matters which it holds in solution, and the ice, when melted by heat, forms soft water; the action of freezing separates the pure water from the substances with which it was previously intimately united. The very same effect is produced by the action of freezing mortar in the walls of buildings; the mortar that is frozen in walls never afterwards acquires strong cohesive properties.

It is customary to suspend operations on buildings of brick and stone, during very severe frosts, when mortar freezes rapidly, but this is only because of the mechanical difficulties of applying the mortar before it freezes; the chemical science involved in the act of freezing its water being either unknown or ignored. Mortar should never be allowed to freeze in the walls of buildings; to allow it to do so, is unwise and unscientific.

Cold Days and Seasons.

A few years since we had a series of very mild winters, and the old people used to dwell upon the cold of by-gone days, and tell what changes had taken place in the temperature of the seasons. An opinion had become prevalent that our climate had really changed from very cold to moderately warm winters, and many theories were propounded to explain the cause of this. The opinion which seemed to gain general credence was, that the extermination of extensive forests, and the rendering of great tracts of wild land subservient to agriculture, was the cause of these climatic changes.

All these opinions have been overthrown by the severe cold of the last and the present winter, and the conclusion is forced upon us, that the operations of nature take place on such a grand and varied scale, that we cannot predict from the past, what kind of season—warm or cold—the next may be.

There had come down to us, by record and tradition, chilling accounts of a famous winter day, called the "Cold Friday," of January 19th, 1810. There never was such a cold day, and never could be a colder, according to traditionary sensations, but this famous old cold day, must yield the palm to the "Cold Friday," of January 23rd, 1857. In Portsmouth, N. H., on the Cold Friday of 1810, the thermometer stood at 12° below zero; on the Friday of the 23rd ult., it stood, in the same city, at 32° below zero—twenty degrees lower. Such is the testimony that has come down to us.

The reason why the Cold Friday of 1810 has become so famous for its cold, is owing to the suddenness of change in the weather: on the day previous the thermometer stood at 47° above zero, consequently the sudden depression of 59° of temperature tried the human system severely. Man can become inured to withstand a very low temperature without being chilled, if the cold remains steady; but sudden changes from warm to cold weather, and *vice versa*, try the human constitution severely. On the eastern Atlantic coasts of our country, the weather is very changeable in winter, persons should therefore be more careful of their health than in latitudes and districts where the weather is more constant.

It was attempted by several to explain the severe cold of last winter, by attributing it to electrical currents in the atmosphere, caused, as was suggested, by the great eruption of the volcano in the Sandwich Islands. Magnetism and electricity are very convenient terms to which changes in the weather may be attributed. It is a common practice, with many persons, to try and explain, learnedly, one incomprehensible phenomena, by another equally as little understood—and magnetism and electricity are terms which are too commonly employed in this manner.

Phosporus; its Source and Nature.

Phosphorus is but sparingly diffused as a component of minerals: it is to the animal kingdom that we turn for our supplies—to bones and the fluids of the body. These are our magazines of phosphorus, from which it is extracted in the large quantities now required for matches and the other manufactures into which it enters.

The leading characteristic of phosphorus is its extreme combustibility. Place a small fragment of it in an open tube, apply heat and ignite it—when, on impelling a current of air through the tube the phosphorus burns with great rapidity. The combustion having termitated, two different residues are produced, one a red-colored substance, the other white. The latter, or white, is an acid compound of phosphorus with oxygen. The former was long imagined to be a combination of phosphorus with oxygen also, but in a lesser ratio than necessary to constitute an acid. Whithin the last few years, however, M. Schrotter, of Vienna, demonstrated that the red compound in question was merely phosphorus. No combination has taken place to form this red compound, but the phosphorus has assumed a second, or allotropic condition, just as sulphur under the operation of heat does.

Common phosphorus has to be kept in water, for the purpose of guarding against spontaneous combustion; allotropic phosphorus, however, may be kept unchanged in atmospheric air; indeed, it may be wrapped up in paper, and carried in the pocket even, with impunity. Common phosphorus readily dissolves in the sulphuret of carbon, whereas allotropic phosphorus does not.

Phosphorus exists in all grains, and it forms a minute portion of every loaf of wheat bread that we eat. It exists in the human brain, but the greatest quantity of it is found combined with lime, in the bones of animals. The phosphate of lime sells at a high price, as a fertilizing agent, simply because it is a substance difficult to obtain in large quantities. Unlike sulphur and lime, which are obtained most abundantly from the mineral world, all our phosphorus is obtained from organic creations.

The Steamship Adriatic.

A correspondent signing himself "An American Engineer," in a communication to the New York *Daily Times* of the 30th, says in reference to the *Adriatic*:—

"When the *Adriatic* crosses the ocean with an expenditure of power produced by less fuel in proportion than any former ship, and continues to do it without costing more for repairs than other ships of equal power, she will have attained a degree of success which will be in proportion to her economy and endurance; but if she uses as much coal to a horse-power, and costs as much to repair as others, she will be a failure, in the true sense of that term as applied to the case of any last new steamer."

The idea conveyed in the above is, that our engineers consider that every new steamer must surpass its predecessor, must be an improvement on it, or they hold it to be a failure. This is the right true spirit of progress in engineering and every other art.

Weather on the Ocean.

It frequently occurs that of two vessels leaving England at the same time, and destined for the same port in the United States, one will experience very stormy weather, while the other will meet with moderate breezes and fine weather. This has occurred with vessels sailing in tracks not many miles apart, hence the great necessity for accurate tables of the prevalent winds of the ocean throughout all its parts, during every day of the year. The steamship *Arago*, which arrived at this port from Havre, France, on the 28th ult., in 13 days, (a very fast passage for her,) reported good weather, while every other steamer which crossed the Atlantic last month experienced most tempestuous weather.

Copper Coins.

As the old copper coins are about to give place to new small cents made of nickel and copper, an obituary of the "red cent" will not be uninteresting. It was first issued as a United States coin in 1792. It then bore the head of Washington on one side, and thirteen links on the other. The French Revolution soon after created a rage for French ideas in America, which put on the cent, instead of the head of Washington, the head of the Goddess of Liberty—a French Liberty, with neck thrust forward and flowing locks. The chain on the reverse was replaced by the olive wreath of peace. But the French Liberty was short-lived, and so was her portrait on our cent. The present staid, classic dame, with a fillet around her hair, came into fashion about thirty or forty years ago.

American Stoves in Europe.

James Napier, the engineer in Glasgow, Scotland, has presented to each of his twenty principal workmen an American cooking stove, with a full set of cooking utensils.—These stoves were cast at the celebrated Carron Works, Scotland, and are stated to be of very superior workmanship.

J. Redpath, Secretary of the North Eastern Railroad Co., Eng., who recently swindled the company out of nearly one million of dollars, has been tried, found guilty, and sentenced to transportation for life.

Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS

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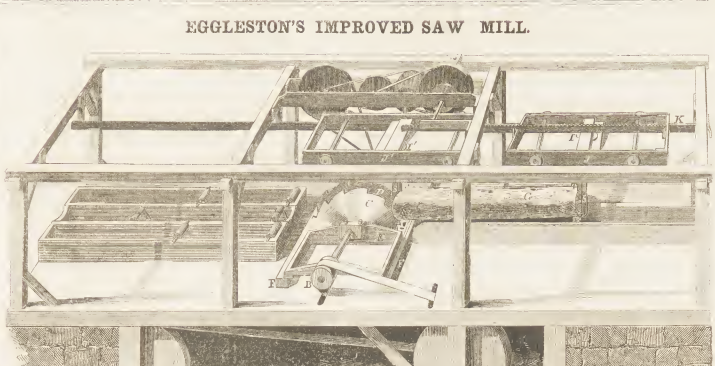
☞ See [illegible] page. No traveling agents employed.

EGGLESTON'S IMPROVED SAW MILL.



The valuable invention here represented contains two principal features. Two circular saws are employed, and so arranged on sliding frames that they may be moved simultaneously in opposite directions, so that by allowing the saws to approach each other by the proper amount, after each board is removed, each saw is set to the log instead of the log to the saw, as usual: and two cuts are made at the same time on opposite sides of the log. The carriage, or the log as set placed overhead, and the log is loosely suspended thereto, so as to be out of the way and not to interrupt the movements of the attendants about on the floor.

Fig. 1 is a perspective view of the whole mill and fig. 2 a section of one of the elevated carriages, J. The same letters being employed to indicate the parts in both figures.

G is the log to be sawed, and C and D are the two circular saws, each mounted on independent arbors. Each arbor is mounted on a separate frame, E, which frame is carried on guide ways, F, in lines transversely to the axis of the log. Both the frame which carries C, and that which carries D, are provided with long racks, not represented, and these racks mesh into opposite sides of a small gear wheel not represented. This gear wheel is fixed on a shaft which is under control of the sawyer, and retained by obvious means in any required position. Thus, by turning this pinion, the saws, C and D, are moved toward each other, or separated at pleasure, and the saw-

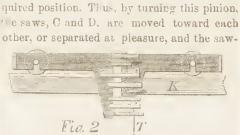


Fig. 2

ing, which is commenced by removing a slab from each side, progresses further into the log as each sawed piece is removed, until there remains a piece of a thickness only equal to the thickness of the dogs. S and T, which hold the log.

These dogs, S and T, of which there are two pairs, one for each extremity of the log, are precisely similar, except that they face in opposite directions, and each pair is attached to separate carriages, J and J', which carriages run on the same track, K, and can be placed at any required distance apart, according to the length of the log to be sawed. Both carriages are moved steadily forward as the sawing progresses, by the usual means, as represented. By turning the hand wheels, I and I', easily reached from below the dogs, S and T are made to release their holds on the stuff, and again to seize very firmly on the ends of a new log so soon as it can be placed in the proper position. Every facility is thus provided for working very rapidly and accurately, and the advantages arising from the arrangement are too obvious to require rehearsal. The invention was patented on the 3rd of March, inst., by Mr. Philander Eggleston, of Mobile, Ala., from whom any further information may be obtained.

Subdivisions of Chemistry.

The following extract from a recent lecture by Prof. Campbell Morfit, presents useful information in clear and comprehensive terms:

"Chemistry is that branch of knowledge which teaches the internal nature of bodies, explains the manner in which they re-act upon each other, and affords the means of rendering them available for many useful purposes to which they would be, otherwise, unsuited.

The grand practical division of modern chemistry is into organic and inorganic chemistry. The former, in contradistinction to the latter, relates to the study of substances having life, and existing according to the original formation by nature. A more critically exact classification would be into, 1st, Mineral chemistry, or inorganic chemistry proper, 2d. The chemistry of organized beings, where we so term because though now dead they have had their origin in a vital principle, and 3d, organic chemistry, comprehending those substances which have a present or very recent vital existence.

Analytical chemistry devises methods for detecting the various elements of a compound, and estimating their proportions. Synthetic chemistry enables us to form homogeneous compounds of dissimilar substances, and is sometimes used to verify the results of analysis. Assaying is analysis by the dry method, and without the use of liqnid re-agents. Practical or applied chemistry consists in the application of chemical principles to the arts, for example, to the making and fixing of colors for paints or dyes, to the processes of bleaching, soap-making, distillation, brewing, pottery, and glass-making, and to culinary and domestic operations. It is more elegantly termed technical chemistry, and to this branch belongs also metallurgy, or the chemical arts of separating metals from their ores.

Pharmaceutical chemistry relates to the preparation of remedies employed in medicine. Medical chemistry is allied to physiology, and treats of the application of chemical principles and products in the theory and practice of medicine. Toxicological chemistry refers to poisons,—their special action upon the animal system, and the means of detecting them. Forensic chemistry embraces both of the latter branches, and assists in the legal adjudication of questions concerning life, health, and property.

The subdivisions in the science are many and increasing; and the varied uses to which it is now applied, for the convenience, economy, and profit of the world are so great, that even subordinate branches are growing or taking place out of those that had previously existed.

Legal Tender.

The following item from *Thompson's Bank Note Reporter*, may be new to some of our readers: "A american gold coin in any amounts —American silver to the amount of five dollars—three cent pieces to the amount of thirty cents, and one cent pieces to the amount of ten cents are legal tender."

Hydro-Steam Engine.

A large silk manufactory is being constructed in Newark to be driven by a water wheel, the water for which is pumped in a continuous circuit by steam. The pressure maintained on the jet of water is very great, and the wheel is a small and exceedingly well finished turbine, the diameter of which is only about one foot. The revolutions are consequently so rapid that instead of multiplying the speed in transmitting it to the shafting, as is usually necessary with all machinery of this description, whether impelled by water or steam power, it has in this case actually to be reduced. It is claimed by the inventor, Mr. Wm. Baxter, that the simplicity and economy of the steam pumping machinery employed, is such as to more than balance the waste in transmitting the power through the water wheel, and that consequently the power is produced and given off to the machinery at a less cost for fuel, and with less wear and tear of the machinery, as well as also more steadily, than in the ordinary steam engines. We shall watch the result, and refer to it again.

Endurance of Submarine Cables.

At a meeting of the Institution of Civil Engineers on January 27, there were exhibited portions of the submarine cables leading to Calais and Ostend, which had been ruptured during the recent gales by a vessel dragging her anchor, as described on page 243. The iron protecting wire had been twisted and ruptured by the force of the vessel hanging upon these cables successively, but the gutta percha covering of the copper wire was but little injured, and exhibited no ragged or disturbed condition, but only a simple and clean break or section. The rest of the covering was represented to be in as good a state as when first laid down five and a half years before.

New Process of Tanning.

We have received from Edwin Daniels, of Elkhorn, Wis., a sample of calfskin "upper leather," tanned by a process for which a patent was issued to him on the sixth of January last. It is well tanned, firm, yet soft and elastic. No bark was used in preparing it, and the inventor informs us that the outlay for buildings and fixtures is just about one-tenth that of tanning with bark, only one vat being required for every ten used in the common process.

Catechu (old *terra japonica*) contains more tannin than any other substance employed in the manufacture of leather; hitherto, however, it has not been used for making the best qualities of leather, because it rendered the skins tanned by it brittle, and liable to crack. This defect has been overcome by Mr. Daniels, who employs it as the principal agent in his process, combined with the sulphate of aluminum, the nitrate of potash, and an acid, by which the skins and hides are "plumped" in a high degree, and the tannin made to combine with the gelatine in proper proportions to form soft and firm leather, susceptible of a fine finish, free from brittleness, and not liable to crack.

Catechu comes to us from India in the form of a concentrated crystalized extract; it has simply to be dissolved in warm water, and is then ready for use. Considerable machinery and apparatus, such as bark, mills, etc., required for bark tanning, are unnecessary for this process. Persons interested in the manufacture of leather will be furnished with samples by addressing Mr. D.

The Wethered system of combining superheated with common steam, an American invention, is now in use in the British Admiralty yacht *Black Eagle*, and also in H. B. M. steamer *Dee*. The officials report a saving of from 31 to 38 per cent in consequence.

New Inventions.

Anti-Photographic Bank Notes.

Some of the bills belonging to banks in this city were copied so perfectly by the photographic process that they could not be detected by the bank officers. This has led the banks to issue bills with yellow colored groundwork, which cannot be so copied. The yellow or luminous ray of light, exerts no chemical action on the prepared paper of the photographic artist, therefore the yellow colored ground of a genuine bill will produce a black ground in a photographic copy.

Provost's Cotton Press.

Messrs. W. F. & C. J. Provost, of Selma, Ala., are the inventors of an improved press for which letters patent were granted on the 21st of October last. It is designed for compressing hay, cotton, or other similar material, and is represented quite fully in the accompanying engravings.

Figure 1 is a general perspective view with the side of the press box broken away to show the interior, and figure 2 an outline of a few of the parts to show how the follower is disposed of in supplying the box with new material.

This press, by an arrangement of double toggle levers, lifts up the press box and platform at the same time, and to the same extent as it depresses the follower, a very convenient and compact arrangement of the working parts, which are all of iron, and very substantially designed.

The inclined arms, B, are prolonged nearly to the ground, and are made the means by which the horses or other animals are enabled to actuate the machine. These arms are sustained by the cross brace, C, and their revolution, by the aid of the shaft. D. gives a powerful rotatory motion to the gear wheel, E This gears into F, which latter is keyed on a strong square-threaded right and left screw, G. Two stout nuts, I, are fitted on this screw as represented, to the lower side of which are jointed by the pins, *i i*, the stout toggles, H, the other extremity of which toggles are carried in the box, M, on the back of the follower, J. In the upper side of the nuts, I I, are simple recesses as represented, in which the lower extremities of the corresponding toggles may be inserted or removed at pleasure. A stout beam, D', across the top, guided by the passage through it of the smooth shaft, D, receives the upper set of toggles, H, and is thereby enabled to support by the rods L L L L, the press box, platform, etc., which depend below.

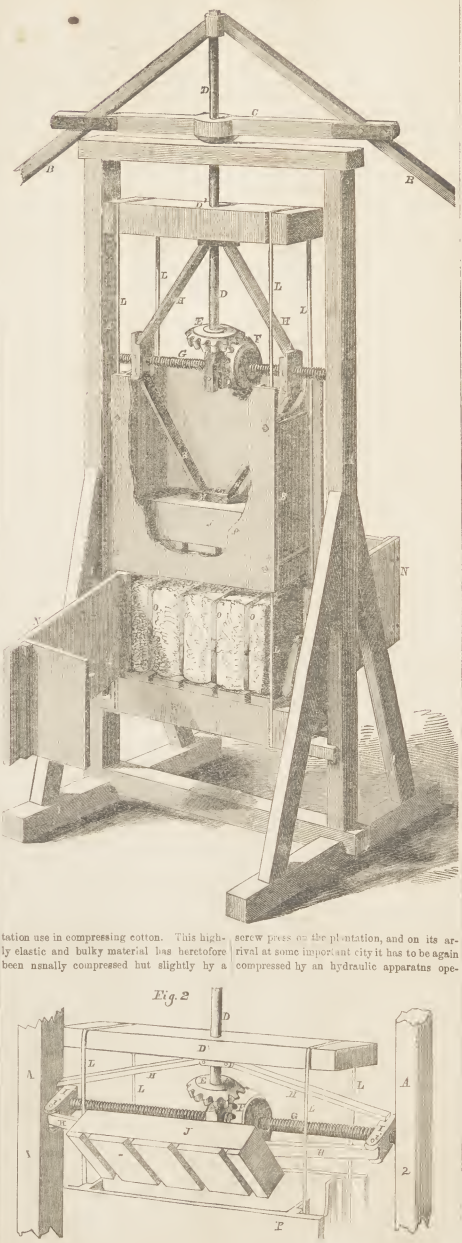
The platform, K, forming the bottom of the press box, P, is guided by embracing at each end the upright frame, A, as represented. The material O, is represented as sufficiently compressed and firmly hooped with the iron bands and clasps, which are now, we believe, quite popular as fastenings for cotton bales. Doors, N, are provided on both sides to facilitate the removal of the material.

The action of the animals by revolving, G, draws the nuts, I I, together, and this raises the press box and depresses the follower, performing both these effects in a manner which is the great characteristic of the toggle, *i. e.*, with a quick motion at first, but rapidly increasing the purchase and diminishing the speed as the position of H H becomes more upright, until at the point of greatest compression—and of course greatest resistance of the material—the purchase is almost infinite. After the removal of a bale and restoration of the parts to their original positions, the follower, J, will be found a little above the top of the press box, and by disconnecting the upper set of toggles from their recesses in the nuts, the follower, with the lower toggles and the nuts still attached, may be freely turned around the screw, G, as an axis, and made to assume the position shown in figure 2, where the whole may be sustained by any convenient means. These parts are thus out of the way in refilling the press box, an operation which is performed from the back side in figure 2.

This press is very simple, powerful, and durable, and is especially intended for plantation use in compressing cotton. This highly elastic and bulky material has heretofore been usually compressed but slightly by a screw press on the plantation, and on its arrival at some important city it has to be again compressed by an hydraulic apparatus operated by steam pumps. There are several large establishments in this city devoted to recompressing cotton, as the freight on this important material is thereby very considerably diminished. Messrs. Provost's press is intended to a great extent to avoid the necessity for this secondary operation by giving the bales a much denser pressure at the first operation.

Further particulars concerning this device which is already, we are informed, in quite extensive demand, may be obtained by addressing the inventors at the locality named above.

PROVOST'S COTTON PRESS.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New Inventions.

Micro-Geology.

The celebrated German naturalist, Ehrenberg, has made a very curious contribution to micro-geology, by the discovery that a large proportion of the various *green* sands, which are found in some stratified deposits, is composed of the *casts* of microscopic shells, the shells themselves having entirely disappeared. The material of these casts is chiefly silex, colored with the silicate of iron.

Wrought Iron Cars.

There is now nearly completed in Patterson, N. J., a first class passenger car a little larger than the ordinary size, constructed almost entirely of wrought iron. This material is employed to obtain great strength, with less weight than usual, and to avoid the injuries to passengers due to the destruction of ordinary cars in any kind of a smash. The experiment, which is being conducted on a most liberal scale, and with a view to establish conclusively the practical superiority of this system, is made at the expense of Mr. E. W. Sargent, a merchant of this city, under the patent of Dr. B. J. LaMothe. The framework is in effect an extremely strong and stiff, yet elastic, basket, each joint or intersection being strengthened by rivets, and the whole being further protected by making the entire platform at each end one strong spring of steel. If the construction runs off the track, falls down a precipice, or comes into collision with another in such manner that the springs at the ends cannot absorb the shock, the car itself will spring, collapse, twist or crumple up, but cannot break and crush its contents with the fragments. One of the great dangers in collisions, &c., arises from the disposition of ordinary cars to penetrate each other with their timbers, or to shut together like the parts of a telescope, and another arises from the facility with which the tops and sides, the seats, &c., separate from the more substantial floors, and are precipitated forward with the passengers. Neither of these, nor many other minor evils, could arise from any violence to this style of car, which is also much lighter than the wooden ones, and thus will absorb far less power in hauling it. The car is constructed entirely of strips, so connected as to be practically without joints. We hope to see this car perfectly successful in practice, and that it may revolutionize the mode of constructing these important carriers of human freight. The principle is beyond doubt an excellent one.

Improved Steam Gage.

The accompanying engraving represents a Steam Gage invented by Samuel W. Brown, of Lowell, Mass., and secured by Letters Patent dated June 11, 1856. It is one of the forms in which the pressure of the steam acts to compress a spring, and in which the motion is increased, and rendered plainly apparent to the eye by the aid of gearing and a suitable index on a dial. Unlike other forms of these instruments, however, the graduations are equally, or nearly equally, distant, in all parts of the dial. This is accomplished by the peculiar leverage employed, which will be described below.

The resistance of a spring either to extension or compression, increases a little more rapidly than in a direct proportion to the extent of flexure. This may be observed in the "Salter balance," as it is sometimes called, where weight is ascertained by the effect it produces on a coiled spring contained in a small case. Without some means of compensating therefor, the graduations on either a spring balance or a steam gage include a less space for a given change under great weights, or at high pressures, than when the spring is less severely strained.

A represents a flexible diaphragm, protected as well as practicable, by metal, from cracking and rupture, and free to receive on its lower surface the pressure of the steam (or of water acted on by the steam) which is admitted through a suitable pipe, S, below. B is a stem or cylindrical rod rising from A, and surrounded by a stout coiled spring, as represented, which tends continually to depress it. C is a lever hinged to the fixed point, D, with its upper face rounded. E is a sector of a gear wheel, mounted on the fixed center, F, and with a face presented to C, in such manner that as C and E are raised by the action of B, *the leverage of C gradually decreases in a ratio which exactly compensates for the diminution of its motion*, so that the position of the gearing on the periphery of E is precisely proportional to the pressure of the steam. G is a small gear wheel and shaft which carries the index, J J', and by this

BROWN'S STEAM GAGE.

Fig. 1

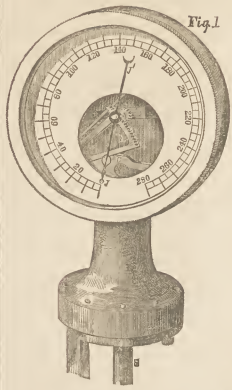
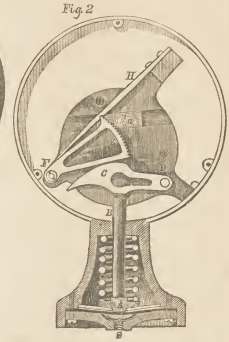


Fig. 2



means indicates exactly the pressure. H is a slender spring, which acts on E with sufficient intensity to overcome the slight friction and insure its falling back, whenever the pressure of the steam is lowered and B is depressed by the action of the stout coiled spring.

The whole is very strongly and neatly housed in a metallic casing, and all the appointments appear very neat and durable. A portion of the face of the dial is left open as represented, in order to see that all the parts are in perfect order. The gear wheel, G, is mounted in a block, so that it may be traversed in a groove across the gage, to facilitate any adjustment which may be necessary.

For further information relating to this gage address the inventor, S. W. Brown, as above.

SHAW'S PENDULOUS CHURN.

The accompanying engraving represents a novel device for agitating cream, invented by Charles A. Shaw, of Biddeford, Me., and patented December 9, 1856.

It is designed to agitate the cream in fully as efficient and rapid a manner as in common churns, and to perform this by a motion which is considerably easier for the operator. The motion of the ordinary vertical dasher is quite unnatural, and severe on the muscles. A back and forward motion, as in working a pendulum, is far more agreeable, and is that in which the power of the hand is applied in this invention.

The apparatus consists of a cylindrical churn, A, suspended by means of the two slotted bars, B, and the pins, C, to the simple frame represented. D is a portion of a gear wheel which is fixed on B, and consequently oscillates therewith. E is a smaller gear wheel, and the effect of this gearing is to give to the arm, F, by the rocking of B, a sychronous and greater degree of motion. G is a link connecting the extremity of F with the cross head, H, the ends of which latter travel in the slots represented in B, so that the motion of the cross head is necessarily in line with the axis of the churn, however much the churn may be inclined to either side by its pendulous motion. I is a rod connected to the dasher of the churn in the ordinary manner. J is a guide secured in the lower extremities of the slots by the pins, K. L is a rod connected by a simple hook to the lower side of the churn, by which the churn may be swung to and fro. This is the only motion required in churning. The swinging of the frame, B, imparts a considerably increased motion to F, which moves the cross head, H, and rod, I, up and down at each stroke. There is a thread or spiral on the rod, I, which travels in a corresponding groove in J, as represented, so that as the churn dasher rises and falls it is rotated alternately in opposite directions, in order the better to agitate the fluid within.

The whole is cheaply and simply constructed, and may be easily repaired by any person of ordinary ingenuity in case of failure of any part, which, however, is not likely. The strains are slight, and the motion easy, and we should presume that this churn would prove very much easier to operate than those working by the vertical motion of the hand.

For further information address the inventor as above.

The New Cent.

This new coin is a valuable institution, and we rejoice in anticipating the decrease of the ugly old "verdigris" cent, which encumbered our *change* for such a number of years. The southern and western cities have always ignored the copper cent, the three cent piece being their smallest circulating medium. But the little coin just issued bids fair to receive a hearty welcome at their hands. A large quantity have been forwarded thitherward. But small although the new cent is, in comparison with the "old red," it is singular that our coins of the least value should still be so large. Why should the one cent coin be so much larger than the three cent pieces? There is still room for improvement in this respect. Commencing with one cent as the coin of least value, it should be smallest in size, and all the others be proportioned in dimensions according to their value. There would be some harmony in such a system of coinage as this.

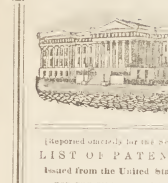
Toy Balloons.

On page 164, this Vol., Scientific American, we described the miniature toy balloons which had been introduced with such success into Paris during the holidays of last winter, and suggested their introduction into our cities, as pleasing and beautiful toys to delight Young America. Quite recently they have come into pretty general circulation, and may be seen in various store windows in our city being placed there as quite novel features of attraction.

A number of our boys who have purchased such balloons have been rather astonished to find them daily growing beautifully less in size, and prematurely old in wrinkles, and at last ceasing to be balloons at all. The cause of this is the percolation of the inflating gas (hydrogen) through the pores of the balloon. This gas is so subtle that it will percolate through the pores of metals, goldbeater's skins, india rubber, and the closest and finest known membraneous substances.

Gun Lubricts.

There are now extensively manufactured near Vienna, instruments used in lieu of percussion caps, but which are fitted within instead of upon the nipple of the gun. They are represented as exploding just as easy as percussion caps, are perfectly waterproof, and the whole, consisting only of a peculiar chemical composition, leave, when exploded, no residuum whatever behind, and instead of choking up, rather tend to clean the nipple.



[Reported officially for the Scientific American]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING AUGUST 4 1857.

Power Looms—Andrew Allen, of Wilmington, Del. I claim first, The combining of the stroke-and-hold mechanism, as set forth, with the lifting and dropping mechanism for the shuttle box, and the shifting mechanism for the pattern chain, substantially in the manner and for the purpose of controlling the pattern and arresting a stroke and holding the lay in the position shown in the reference mode.

Second, The combination described in the patent of H. Jacoby, dated October 21, 1851, for varying the movement of the pattern chain when desired, substantially as herein set forth.

And I claim, Third, The retarding wheel C, with its pawls, in connection with the pattern chain wheel or sprocket, substantially as and for the purpose herein specified, the same being held, when several, jules are required to be made of the same description, by the pawl and ratchet wheel.

Fourth, The combination of the pins, m, m, on the pattern chain sprocket, and the lever, N, with the pawl, P, and retarding wheel, for the purpose of causing the requisite pause of the retarding wheel, in the operation of the machine, when the pattern chain wheel desired, substantially as described.

[The invention is also to be applied with great success to the weaving of fancy checks, ginghams, and other fancy goods, and produces a long pattern with but a short pattern chain. It also provides an extremely convenient and ready means of varying the pattern, by simply altering the pins received in with a pair of pincers, and of altering the position of such pins when desired, without changing the pattern chain wheel, and in many places, as in the ordinary manner.]

Taps for Locomotives—Levi Bissell, of New York City. I do not claim the employment of a valve, or valves, in combination with the mandrel, for the purpose of opening and closing the passages, as the same is old, and by patenting, and therefore I do not claim the valve, as described, and by its relation to and being operated by the mandrel in the manner and for the purposes specified.

Walking-Stick Gun—Ira Buckingham, of New York City. I claim the employment of the arm and trigger, in combination with the lever, substantially as described.

And I claim, Second, the combination of the lever, L, and the spring, M, with the lock, for the purpose of locking the lock by removing the section, L, and allowing the spring to act upon the lever, substantially as and for the purposes specified.

Nut Machines—R. Ivers Bingham, of Buffalo, N. Y., I claim the combination of the rotating cutting tool, R, the pin-feeder, O, provided with the spring, e, and the reciprocating, and rotating mandrel, P, substantially as described, and for the purposes stated; the said mandrel being operated by the lever, A, and spring, C, and provided with the stop, D, and the pin, E, substantially in the manner and for the purposes specified.

Washing-Stock Gun—Ira Buckingham, of New York City. I claim the employment of the arm and trigger, in combination with the lever, substantially as described.

And I claim, Second, the combination of the lever, L, and the spring, M, with the lock, for the purpose of locking the lock by removing the section, L, and allowing the spring to act upon the lever, substantially as and for the purposes specified.

Vapor Burners—D. H. Carpenter, of Wallingford, Conn. I claim the heat pipe, or equivalent device, for heating the vapor, as described, whether applied and varied, as described, and bringing the jet, or jets, above the burning orifice or jet, by which means the proper degree of combustion and heat is secured, and the combination of the heat pipe with the check valve, a, which supplies and regulates the quantity of vapor necessary for the production of the maximum effect for the purposes designed.

Making Paper—Patrick Clark, of Rahway, N. J. I am aware that the passing of paper pulp between two rollers together with the pipes, C, C, and the vat at E, H, H, and vat above the same, and the pipes, F and K, are old and well known.

Therefore I do not claim those pipes separately and in themselves.

Neither do I claim to have invented the use of a cistern to receive the pulp and water, and a pump to raise and supply the pipes for cleaning pulp into paper, by means of a valve, as described.

I claim the arrangement of the conducting pipes, W, with the cistern, V, and the pump, X and K, for the purpose of washing the I H, and the pipes, F and K, for the purpose of washing the I H, and the pipes, F and K, for the purpose of washing any color out of the machine, all substantially as described and for the purposes specified.

Coupling of Thills to Vehicles—S. T. J. Coleman, and J. W. Sibbitt, of Cincinnati, Ohio. We claim securing the bolt, C, to the axle, A, by the clip, D, and nut, B, by means of the boxes, I, and bars, D, provided with the screws, E, substantially as and for the purpose set forth.

[Heads fixed to the shaft are secured in loops attached to the axle in such a manner that a very secure fastening is obtained, and one that may be readily adjusted, so that the heads will always be kept tight.]

Coal Stoves—J. A. Davis, of Syracuse, N. Y. I do not wish to be understood as claiming the downward draft as that is well known.

But I claim the peculiar arrangement of the shaking bar, G, constructed as described, the bars, M M, and dampers, D and C, the whole constructed and operating as described.

Discharging Cannon—Josiah Dodge, of Dummerston, Vt. I claim the double-spring hammer, s h, as described, in combination with the inclined surfaces, a b c, arranged and operating substantially as and for the purposes set forth.

Smoothing Planes—John P. W. Erdmann, of Philadelphia, Pa. I am aware that an iron similar to mine is known as a scraper, a d that iron h ve been adjusted in stock with mechanism for changing the cutting (or scraping) edge of the iron from a horizontal to a vertical bed as claiming such features as my invention.

But I claim pressing the throat of the plane back of the iron, the e a tic strip, D, substantially as and for the purposes described.

Cutting Screws—Peter Hoffner, of Rising Sun, Ind. I claim in combination with the die stock, b, the guide tube, c, the spring, d, arranged and operating substantially as and for the purposes set forth.

Gessing and Closing Window Blinds—Lucius N. Fay and Wm. Mason, of Warren, Mass. We are aware that a worm wheel and screw have been used for a similar purpose, but the operation of the screw is rather slow, and it a quick threaded screw is employed a good deal of power is required to turn it, and it only operates the blind quickly, and not much power is required to operate it, but little time is lost in the act by the working cords.

What we claim operating the blind A, by means of the worm wheel, F, and flanched plate, I, arranged and applied to the blind and panel, substantially as shown, for the purpose specified.

We further claim attaching the worm wheel, F, to the rod, E, which is provided with the cords, G, and curved cam shown, whereby the gearing of wheel, F, and flanched plate, I, or any other device answering this purpose, may be perfectly protected from the weather and dust, substantially as described, the passing turns in the under-side of the shell, J, as described.

[This mode of swinging blinds or shutters to be operated in the inside of a room has been in use for years, and only provides for retaining them open or closed, or in any intermediate position, as may be desired, for shade or other purposes.]

Operating Slats of Window Blinds—Lucius N. Fay and Wm. Mason, of Warren, Mass. We claim the slotting sector or knob, B, placed on the guide rod b, which is arranged in the manner shown in the drawing, for the purpose specified, in connection with the slat rod, d, by the rod, e, the slat rod, d, being operated by a rod, f, which is connected to a rod, d, and the slide, g, substantially as and for the purpose specified.

[Undersigned, by the same inventors as the last, is a very perfect fastener by the operation or closing of a blind. The slats are adjusted in the desired position by power by the friction of the fastener or windlass, even when the blind, and cause it to be thrown by the wind nor by any force applied on the outer side. It removes one great source of annoyance which always attend the use of ordinary blinds, and is simple and durable.]

Steam Boilers—Robert Ferguson, of New Orleans, La. I claim the eccentric arrangement of the water spaces, A A' A'', connected with each other, and alternating with the heating surface section, substantially as and for the purpose specified.

Cultivator Teeth—J. R. Forsyth, of Capp Girardeau, Mo. I claim the new and improved cultivator tooth, consisting of a sheet steel blade bent to the required form with a cast iron box cast thereon, substantially as specified.

Tuyere Motion or Power Looms—Wm. H. Gray, of Hooversville, Pa. I claim the combination of the lever, H, the end-screws a a and worm wheel, a and c, or their equivalents, with the rock-shaft, I, the arm, K, and rod, G, attached to the friction clutch, the lever, F, the cams d and f, and the rod, E, all in the manner arranged, applied and operating substantially as set forth, for the purpose specified.

Second, The combination of the latch, d', attached to the loose pulley, b, to the friction clutch, the levers J and K, spring, e, and rod, L, arranged and operating in the said portion of the clutch, substantially as and for the purpose set forth.

[This is a positive "let off," and maintains an almost perfectly uniform tension on the warp. The amount of let-off motion is regulated by an endless screw and the lever, K, the latter of which is set by the weaver to more or less, according as there is more or less yarn upon the beam, D, this permitting a greater or less movement of the part K of the clutch.]

Harvesters—Cyrus H. McCormick, of Chicago, Ill. I claim the combination of the blades, m n, with the peculiarly constructed platform, A, and the center swell or ridge, v, when arranged to operate in relation to each other, as and for the purpose set forth.

Feed-Stops for Mortising—Wm. Halliwell and Levi Osborn, of Poughkeepsie, N. Y. We claim the stop, C, combined as one of the two carriages, B and C, by which both are simultaneously supported by the feed-shaft, A, and each cut from under the chisel and automatically to replace it by one to be cut.

Second, We claim the swivel head for holding the chisel in such a manner that it may work in guides, x z, the chisel adjusted out to the surface of the bit.

Third, We claim the levers, cams, and ratchet bar, as described, for holding the bit in place.

Roasting for Roving and Stubbing—Isaac Hayden, of Lowell, Mass. I claim making that portion of the barrel of the bin which receives the cotton from the second layer or roving, larger than that part of the barrel which receives the first layer or stubbing, substantially as described, to compensate for the thickness of the said first layer, and makes the draft on the roving or stubbing uniform.

Sewing Machines—Abial O. Herron, of Remsen, N. Y. I do not claim a feeding device, consisting of a longitudinal or transverse motion in the direction of its axis in addition to a rotary motion.

But I claim the hook, b, and roll, t, arranged and operating in the manner and for the purpose set forth, and not substantially as described, for the purpose specified.

Factitious Ivory—Dr. Ludwig Ileld, of Brooklyn, N. Y. I do not claim the employment of any of the ingredients of nut rials mentioned above nor to any of the ways enumerated, as they have been used separately, such as substances or gums with bone or ivory powder, and with glue or gelatine, as they are known to knowledge, prescribed for plastic compounds resembling ivory.

But I claim the ivory like plastic compound, produced principally by the combination of albumen and gelatine, or vegetable fibre with vice chloride or zinc and gum resins prepared and applied in the manner substantially as described.

Sugar Boilers—Peter Holbrook, of Whitehall, N. Y. I claim the arrangement of the steam pipe, D, the sap pan, I, and the cover, F, to the syrup pan, E, and the pipes, G, and, H, and the pipe, K, and the valves, L and M, or their equivalents, and arranged substantially in the manner and for the purpose set forth.

Protecting the Necks of Horses from Flies—Ernst L. Kuntry, of New York City. I claim the stretcher, C, and its combination with the connecting cords, operating substantially as set forth and for the purpose.

I also claim the weighted cords, n and o, connected therewith, for the purpose of keeping the stretcher, C, in the same time permitting the free movement of the animal's head.

Projectile for Rifled Cannon—T. T. S. Laidley, of U. S. Army. I do not claim, of course, the attachment of a malleable ring, or its equivalent, to the projectile, forming the body of the projectile is expanded by the force of the discharge, so as to take the grooves of the rifled gun.

Nor do I claim the attachment to eliongated shot or shells of a cylinder of wrought iron fastened to the body of the shot or shell, and which is made to project more or less intended in the cast metal or which the iron may be, and which may also be attached to the out of the shot or shell, and its sides projecting beyond.

But I claim the attachment to the main body of an elongated projectile, either solid or hollow, of a covering of some malleable metal, consisting of two separate pieces, embracing the whole or a portion of the exterior surface, by shoulding in the upper metal of the shot, the turned in end, and two or more longitudinal seams or edges, so as to form a tight joint between the two separate pieces two or more pockets, having a free space between the cast metal body and the malleable covering, and one into which the gases at the moment of discharge entering will force out the covering, and cause it to fit the grooves of the rifled gun, and diminish or entirely cut off the windage of the projectile, whether fired from a rifled or smooth bored cannon, substantially as described.

Stop Cock Gas Regulator—O. L. Lawon and A. A. Starr, of New York City. We claim the cock, F, with conical plug, B, on which is cone-shaped groove, f, extending entirely around the same, in combination with the mechanism for operating the same, substantially as described, and for the purpose of a portable gas apparatus for vessels, cars, &c.

Window Blind Seat Holder—Wm. S. Mayo, of New York City. I do not confine myself to the form there indicated. They may be made of many different forms.

But I claim the construction and application to the rod, F, of window blinds of springs or friction pieces of metal to hold the slats in any given position, substantially like the manner and arrangement indicated.

Operating Window Blinds—James McMackin, of New York City. I claim the bar, K, constructed of three pieces, a, b, c, provided with the bearing formed of the slotted plate, f, on the piece, c, and the lodge, k, on the piece, b, the whole arranged in the blind, A, and fitted within the sill, D, substantially as shown for the purpose set forth.

[Another ingenious device for opening, closing, or fixing in any intermediate position either shutters or swinging blinds, without opening the window.]

Key—Stuart Perry, of Newport, N. Y. I claim a bolt key, secured by a spring, and which will have a movement before, during and after they have arranged the slide-bolt or tumbler to operate upon, in such a manner, so that at the exact point or part of the movement of said key, at which it will arrange the slides or tumblers, they shall be discharged, and thus prevent any one but the maker of the lock from making a duplicate key, substantially as set forth.

Capstans for Ships—Chas. Perley, of New York City. I do not claim a capstan, windlass and wench combined, neither do I claim a horizontal beaver in itself.

But I claim the combination of the adjustable bearing block, o, with the beaver or windlass, m, so constructed and operating that the chain cable, may be used to relieve the shaft, l, therefrom, leaving said shaft, l, free to be employed for other purposes, as described, substantially as and for the purposes specified.

I also claim the combination of the friction rollers, n n, with the beaver or windlass, m, and bearing block, o, whereby the shaft, l, power applied to the beaver, m, or itself free for use as a power capstan or windlass, substantially as and for the purposes specified.

Forging Nails—S. J. Seely, of New York City, assignor to John M. Hood, of Bridgeport, N. J. I do not wish to be understood as claiming the use or employment of the kind of feeder and cutters above described, as equivalents for the feeders and cutters of other machines.

Nor do I wish to be understood as limiting my claim of invention to the mere employment of a horizontal anvil and hammers, nor to the described arrangement of the mechanism, for the same purpose, as similar results may be obtained by any invention by the substitution of equivalents.

I claim the employment of two anvil faces placed at an angle with each other, and having a rocking motion in a vertical plane, in the manner set forth, in order to be forged, substantially as described in combination with the hammers, substantially as and for the purpose described.

Harvesters—N. C. Sherman and S. Lightcap, of Hadley Iron Works, Pa. Manufacturing purposes. A peculiarly formed adjustable collar, H, with the caster wheel, I, in the manner and for the purpose that the caster wheel may be, at the pleasure of the driver, held rigid in one particular position, for driving wheels or released so as to turn in the ordinary manner.

[This provides a means of obviating the side draught when in straight motion without obstructing the turning motion of the caster wheel when the latter is desired. The axis of the caster wheel may be set either directly parallel to the axis of the driving wheels or a little oblique thereto, according to the amount of side draught experienced in the operation of the machine. On turning the team, the caster wheel may be set entirely at liberty, so as to turn freely in any direction in which it may be impelled, and thus offer no resistance to the motion.]

Propeller Blades—G. W. Swartz, of Buffalo, N. Y. I claim a propeller blade constructed with a diameter as to embody said principles, substantially as set forth.

Self-Feeding Drill—G. C. Taft, of Worcester, Mass. I do not claim the employment for working the hollow screw, for that arrangement is commonly used for feeding the drill to its work, the screw being turned by hand.

Neither do I claim the means employed for adjusting the bed.

But I claim connecting the screw C with the crank G, by means of the clamp H, substantially as and for the purpose set forth.

[This invention provides a peculiar friction clamp for feeding the drill automatically to the work in drilling metals. By the use of a friction, clamp the tool is fed with a force readily adjustable by the attendant, and is free to stand and turn without advancing in case of meeting with any too great obstruction, thus avoiding the breaking of any part.]

Harvesters—Chas. Tinker and J. A. Sprague, of Manlius, O. We claim the vibrating arm, K, parallel rod L and connecting rod, M, constructed and arranged with the bent levers, X X, fulcrum wheels Y Y, levers, Z Z, and stops a a, in the manner and for the purpose set forth, in relation to each other, and used in connection with a self-adjusting cutter bar, substantially in the manner and for the purpose set forth.

Bevelling Staves, &c.—John Trahin and Charles Voetel, of New York City. We claim the bevel in its present any essential features in the machine described but merely their specific arrangement, as shown and described for the purpose specified.

Boot Trees—Wm. Upfield of Lancaster, O. I claim, first, The grooves, b b, cut in wedges, A A, the sides, B and F, and the heel piece, C, substantially as and in the manner and for the purposes specified.

Second, I claim the wedges, A A, in connection with post I and wedges A A, or their equivalents, in the manner and for the purpose set forth.

Third, I claim nut H, the right and left screw shaft, D and E, wedges A A, or their equivalents, when arranged, combined and operating substantially in the manner and for the purposes specified.

Fourth, I claim in this connection sleeve, m, in connection with block R, in the manner and for the purpose specified.

Shower Bath Apparatus—Noah Warlick, of Lafayette, Ala. I do not claim the employment of a valve, D, neither do I lay claim to the portability of the apparatus.

But I claim the combination of the double armed bolt, with the valve V, as described, whereby it is made to operate automatically, and requires no valve to be set, and also operating said valve, the arrangement being as set forth.

Factitious Ivory—Wm. H. Willing, of New York City. I claim forming artificial ivory by thoroughly mixing and combining the ivory powder, or other fibres, having equivalent properties while under the operation of heat, substantially as set forth.

Elastic Gore Cloth—Charles Winslow, of Lynn, Mass. I am aware that an elastic cloth has been made by shrinking the warp, and that such cloth has been made by cutting the elastic fabric, as made of two layers of such cloth combined.

But I claim an elastic band or gore cloth when made not only of a fabric composed of a cement of india rubber or gutta percha, and two pieces of cloth, in which the warp and weft of each piece are made to cross one another diagonally or at an acute angle, but with the edges of the cloth cut and overlapped in one parallel or approximately so to the line of direction of operating the warp threads, and cemented down to the fabric as described.

Grinding Knives—Anthony Hanby and Francis Shipp, Jr., assignors to themselves and P. W. Shipp, all of Leicester, Mass. We claim giving to the knife or other article to be ground or polished, a vibratory motion in a tangent to the plane of rest on of the stone or wheel or parallel therewith.

Pedestal for Railroad Cars—D. H. Peery, assignee of himself and Daniel Shepherd, of New York City. I claim the employment of a flexible or yielding jaw to the pedestal constructed and operating substantially as described, and for the purposes specified.

Joiners' Plane—T. D. Worrall, of Lowell, Mass. Having thus fully described my invention, what I claim is, first, The employment of the bevel lever, C, for securing and holding the bit, in the manner fully set forth in the specification.

Second, I claim the clamp lever, C, arranged in combination with U strap B, and nut F, for the purpose of retaining and adjusting the bit, substantially as set forth.

Tawing and Coloring Skins and Furs—David S. Hibard, of Hopkinton, N. Y. I claim in the process of compounding either of the above mentioned alkaloids or their salts, with oil or lard, and water as described, and the process of applying those compounds to the skins or furs, substantially as set forth, and for the purposes as described.

RE-ISSUES.

Wire Springs—Henry Dexter, (Cambridge, Mass., assignee to Wm. Carleton, of Charlestown, Mass.

Stoves—J. J. Dudley and Russell Mann, of Troy, N. Y., assignor to A. W. Eddy, of Waterford, N. Y.

Stoves—A. W. Tobe, (assignee to Young & Brother) of Albany, N. Y.

Cooking Stoves—Elias Young, of Cincinnati, O.

Counterfeit Trade Marks.

Among not the least of the many evils inflicted by the fashionable rage for foreign goods is the fact that it tends to deceit, that this deceit, in its turn, finally redounds to injure very unjustly the reputation and sale of American fabrics. The *Dry goods'* correspondent of the Providence *Journal* hereby contends that the best specimens of domestic production—specimens which compare with the best foreign importations, and which reflect high credit on American skill and taste, are sold as foreign by retailers, and only the poorer qualities are exhibited as American, so that the excellence of American fabrics goes to enhance the reputation of foreign goods, and to keep down that of our own. This ought to be prevented. It may serve the interests of one season, or of a particular style, to call it French or English, but it is surely against the permanent interests of the manufacturer. The temporary sacrifice which the American producer might make by having his goods sold for what they really are, would be ten-fold repaid by the reputation which they would speedily acquire for themselves. This has been tried in other articles, and with such success as should leave no doubt on the subject. There are American articles that have struggled through the same difficulties, and have reached a position where they stand higher in our own and the foreign markets than the same kind of articles manufactured in Europe. An American manufacturer of edge tools has lately recovered damages in an English court against an English manufacturer who counterfeited his trade mark.—This shows the value which the American producer can give to his articles, and the folly of concealing his superiority under an English name.

But the reform of this evil, as well as of so many others, requires a better organization of our industrial interests. We need this greatly; there are so many things that can be done by associated effort that will benefit each individual, but that no individual can undertake for himself. In England they understand these things better—it is one of the great advantages that they have over us. The manufacturer who produces a superior article should *associate his own name with it*, and that association will, in time, be a capital to him—a capital that will stand by him at the time when he most needs it, and which cannot be taken from him except by his own fault.

Scientific American.

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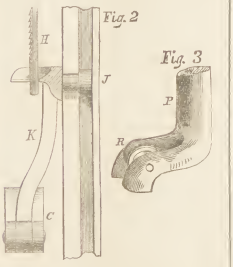
WOOD & DE VAUGHAN'S JIG SAW.

Improved Jig Saw.

The apparatus here represented secures, in an admirable manner, the ends desirable in the small and rapid machines used for cutting scrolls and other fancy and irregular work. The saw is stretched very perfectly, and guided and supported in such manner as to allow the use of a very narrow saw. Its ability to describe short curves is considerably greater than that of most styles of scroll sawing machines.

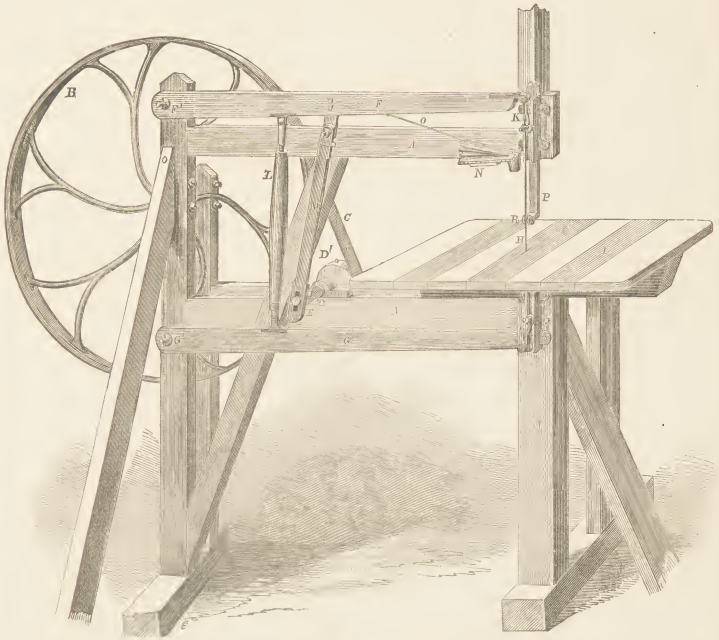
Fig. 1 is a perspective view of the machine complete, while Figs. 2 and 3 represent a few details on a larger scale. The saw runs in fixed guides, and is stretched between light elastic levers of wood, to which it is connected by short and light links. The saw is supported by a guide wheel at its back, immediately above the surface of the wood which is being sawed. Fig. 2 represents one of the links which connect the saw to the levers; and Fig. 3 represents the steadying or guide wheel, which stands behind the saw.

A represents the frame of the machine, and B the large pulley on the first or driving shaft. C is a belt conveying the motion to the small pulley, D', on the crank shaft, D. E is the crank pin. F is the upper lever, and G the lower lever, turning respectively on their fixed centers, F and G'. H is the saw, and I the table on which the work is placed. J J are guides, and K K short links connecting the cross-heads or guide pins at the end of the saw to the corresponding levers. L is a straining piece provided with a screw, as represented, and by turning which the tension of the saw may be increased or diminished at pleasure. M is the connecting rod which con-



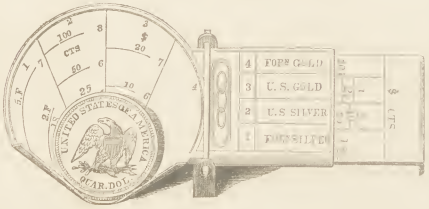
veys the motion of the crank pin to the lower lever, G. N represents the ordinary bellows, to remove the saw-dust from the top of the work, and O the spring by which the discharge of air is induced. P represents simply a steadying bracket, the hight of which may be readily adjusted by the screw as represented, to adapt its position to the thickness of the stuff being sawed; and R is a steadying wheel mounted in P, and grooved in such manner as to bear firmly and fairly against the back edge of the saw.

The elasticity of the levers, F and G, which are usually of ash, is amply sufficient for the slight inequalities in the length of the saw and attachments due to the varying angles of the links, K K. All the parts being extremely light, the saw is driven at a very high velocity without serious vibration or other difficulty. The motion is always in a perfectly right line, so that the kerf or thickness of the cut is little or no greater than the width of the saw.



For further information address the inventors, Wm. P. Wood and Saml. de Vaughan, Washington, D. C., who obtained a reissued patent therefor on the 10th of March last.

MARANVILLE'S MONEY SCALE.



The instrument represented in the accompanying figure is both a weighing and a measuring scale, adopted equally to American and the most common foreign money. It is intended to be kept on the shelf or counter of each business man, as a ready means of detecting any fault in the weight or size of either silver or gold coin. It is represented as being used to test, in this manner, an American quarter.

Considered as a measure simply, it will be observed that the coin is laid with its edges in contact with the turned up lips on the lower side. The surface of the lune-shaped portion of the scale remaining uncovered is divided by radial lines into four parts, numbered 1, 2, 3 and 4. The first, as is distinctly stamped on another portion, is intended to indicate the sizes of the respective foreign silver coins (1 shilling, 2 francs, 5 francs, etc.); the second does the same for American silver, the third for American gold, and the fourth for foreign gold. The lips or rims referred to on the lower or near side, serve, by their varying thickness at different points, to indicate in an equally simple manner, the proper thickness for the rims of the respective pieces, so that the instrument instantly indicates whether the coin is or is not of the exact proper diameter and thickness.

Across the upper surface of the plate is soldered a light triangular bar, as represented, and the overhanging ends of this bar are supported in holes in the upturned ends of a strip of metal, which, stretching across beneath, serves as a support for the whole. An additional part, seen on the right, is mounted so as to be free to slide in or out on the arm of the scale opposite to the coin, and there are graduations on its upper face which denote the exact extent to which it should be drawn out to balance each coin. Thus the apparatus becomes a delicate and very nicely adjustable scale for weighing each coin—not for indicating the absolute weight in pennyweights, etc., but simply for showing whether or not the coin under examination is of a weight equal to its standard.

This invention is very cheap and portable, and is evidently little liable to get out of order. It is represented full size, and can be carried in the pocket with very little inconvenience. Ordinary money scales are capable only of indicating the weight; and when, in order to make up from baser metal the proper weight of a gold coin, the coin is made thicker, or of larger diameter than usual, they have no means of detecting the fraud.

The instrument was patented on the 13th of January last, by H. Maranville, of Clinton, Ohio, from whom any further information respecting it may be obtained.